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PATENT

SPECIFICATION



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COMPLETE SPECIFICATION.

**Improvements in Foodstuffs for Human Beings, Cattle and other Animals or Birds, and in the Manufacture thereof.**

I, EDWARD MAKIN, of 40, New Brown Street, Manchester, in the County of Lancaster, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 My invention relates to improvements in foodstuffs, for human beings, cattle and other animals, or birds, and in the manufacture thereof.

Various processes have been proposed for the manufacture and utilization of waste and wild or naturally growing vegetable substances and matters such as heather, gorse, brambles, bracken, and other ferns, grasses, leaves, stems, stalks, roots and the like, and according to one such process vegetable matters have been subjected to a comminuting operation until reduced by mechanical means to a paste or pulp, when the latter has been formed to any desired shape and dried without the use of pressure and binding materials and preferably sterilised by the application of heat such as treatment with steam before the termination of the comminuting process.

In a similar process brushwood crushed between rollers has been mixed with ground malt and salt and then wetted and allowed to stand in heaps until the fibre and raw protein has been rendered digestible by self-heating.

In another process, dreg, which is the liquid refuse of grain used in the processes of brewing and distilling, has been evaporated by the action of heat applied directly or through the medium of hot air, and the dried residue, after being broken up or reduced to meal or powder, has been used as food, either alone or mixed with other vegetable matters.

It has been proposed to grind maize stalks and the like and to dry or steam them and then mould the product into briquettes.

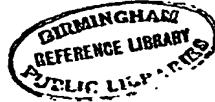
Food cakes have been prepared by the combined action of pressure and heat, from bran and a mixture of other food stuffs, such as the husks and pods of plants, etc., grass, leaves, etc., with the addition of bye-products of flour mills, malt factories, starch and sugar factories and similar materials.

30 An animal food for use by itself or combined with other food substances has been composed of yeast, hops and commercial peat moss combined if desired with molasses in any suitable manner to form a meal.

Again, vegetable materials consisting of roots, herbs, etc., have been chopped up, mixed, pulped and digested preferably in a solution of the sediment obtained by the treatment of previous quantities of like materials. The digested pulp has then been boiled in a steam-jacketted pan, dried, baked, and reduced to powder before being again heated and allowed to cool in the ovens.

Many other processes have been proposed involving the use of all kinds of

[Price 6d.]



suitable vegetable matters with the addition of suitable flavouring and sweetening substances as well as suitable herbs, selected for their medicinal qualities and entailing the use of cutting, grinding, and pulping machines and the application of heat applied by the agency of steam or other means.

Further, in the prior Patents Nos. 21,909 of 1901, and 14,124 of 1903 granted 5 to me and 5224 of 1906 granted to me and H. M. Hardcastle I have described and claimed the manufacture of new and improved foodstuffs having spent hops as their base or principal ingredient and in the Patent granted to me No. 9835 of 1895 apparatus is described suitable for treating and drying brewer's refuse such as saturated spent hops, and grains.

My present invention may be divided into two heads namely, first an improved process of manufacture, and secondly, an improved combination of ingredients from which the foodstuff is produced.

The improved process above indicated is characterised by the series of successive operations or treatments hereinafter specified, and the improved combination of ingredients is characterised by the use of at least fifteen *per cent.* of spent hops or hop meal and at least thirty *per cent.* of other vegetable substances.

In carrying my invention into effect I take heather, gorse, bramble, bracken and other suitable ferns, grasses, leaves, stems, stalks, roots and the like of a 20 non-toxic character and as freshly gathered as practicable, and add to these vegetable substances (which may be used in any advantageous combination) other foodstuffs such as distillery meal, barley meal, oatmeal and like meals, cotton seed meal and seasoning liquids or essences, and also spent hops or derivatives therefrom as described in the aforesaid Specifications Nos. 21,909 25 of 1901 and 14,124 of 1903, in such proportions as to give the desired and known tonic and medicinal properties to the mass. I regard as essential that such proportions shall be at least fifteen *per cent.* of hop meal or equivalent hop derivative and at least thirty *per cent.* of vegetable substances as above indicated.

The mass is then reduced to a pulp in any convenient machine or apparatus either with or without the aid of chemicals which may be necessary or advantageous in some cases. As for example when the straws of cereals, or other strongly fibrous vegetable matter such as stalks of plants and woody stems are employed as ingredients it may be advisable to treat and partially digest them by boiling alkali after reducing them to a pulp in sealed vessels so as to retain the volatile oils.

Alternatively, I may avail myself of the known process of partial digestion by self-heating and in this case I place the pulped mass in heaps, for say, twenty-four hours until the fibre and raw protein has been rendered digestible 40 by self-heating.

At any convenient point or time in the process the mass of ingredients is sterilised and/or cooked by the application of highly superheated steam, hot air, or by direct heat; and if the product is to take the form of cakes, nuggets, or the like the sterilising process may be conveniently carried out in apparatus of the type described in the Specification to the said Patent No. 5224 of 1906, which describes means for mixing or kneading meal or flour into a dough or paste and simultaneously highly heating the same by the addition and direct application of steam, superheated or otherwise.

The necessary liquid for mashing and pulping the vegetable mass may be obtained wholly or partly in any or all of the following ways (a) the spent hops or derivatives therefrom as indicated may be added in the saturated or partly saturated condition as received from the brewer (b) vegetable juices expressed from mangolds, swedes, turnips and other roots, fruits or vegetables (c) other flavouring liquid or liquids such as essential oils or essences.

To the mass may be added saccharine matters such as honey, molasses, sugar, glucose and the like, colouring and flavouring substances.

It will be obvious that the constitution of the mixtures, as already indicated, may be greatly varied within the limits defined according to the particular purpose to which they are directed, and therefore I wish it to be clearly understood that the following example is merely an indication of a suitable combination of ingredients for the purposes of my invention.

## EXAMPLE.

	Vegetable pulp	- - -	about 40 parts
	Distillery meal	- - -	15 parts
	Bran	- - -	15 parts
10	Ground oats, or cottonseed meal or barley meal	- - -	10 parts
	Spent hops	- - -	18 parts
15	Flavouring, seasoning and sweetening liquids, and sub- stances in addition to the vegetable juices included in the pulp	- - -	2 parts
	Total	- - -	<u>100 parts</u>

If mixed with molasses or other saccharine matter the above proportions will 20 vary proportionately.

It is obvious that the resulting mass may be moulded into cakes etc., or be converted into a meal or flour and be cooked or otherwise utilised in any known manner.

Having now particularly described and ascertained the nature of my said 25 invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A process for the production of improved foodstuffs comprising comminuting and reducing to a pulp mechanically vegetable substances, forming at least thirty *per cent.* of the foodstuff in addition to at least fifteen *per cent.* 30 spent hops or derivatives, preferably adding dried food stuff such as cereals, partially digesting the mass, then sterilising by superheated steam, hot air or direct heat, adding flavouring and sweetening liquids and substances, and subsequently either reducing to meal or powder or utilising in any other known manner.
- 35 2. A foodstuff produced in accordance with the process claimed in Claim 1.
3. The foodstuff produced in accordance with Claim 1 and under the specific example stated.

Dated this 21st day of March, 1918.

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